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# THE VEGETABLE CANNING INDUSTRY IN ILLINOIS

Methods of procurement, types of pack, sales  
and distribution, contracts with growers

By R. A. Kelly

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# THE VEGETABLE CANNING INDUSTRY IN ILLINOIS

By R. A. KELLY, Associate Professor of Fruit and Vegetable Marketing

**T**HE ACREAGE OF VEGETABLES grown for commercial processing in Illinois has increased steadily. In 1953, the year of this study, 120,000 acres were planted for canning. This was double the acreage in 1912 and four and one-half times the acreage for the fresh market in 1953.<sup>1</sup> Consumption has also increased, presumably reflecting changes in eating habits and the lower, more stable costs, general availability, and convenience of canned compared with fresh vegetables.

Proximity to supply influences the location of the canning factories. In Illinois, the industry has become concentrated in the northern part of the state where soils, temperature, and rainfall are more favorable to growing vegetables for processing.

This study was undertaken to analyze the changes that have occurred in the Illinois canning industry with the belief that factors may be suggested for its future improvement. Information on packs, sales, and distribution was obtained by personal interview with canners who processed asparagus, sweet corn, peas, pumpkin, and tomatoes. Economic relations between producers and processors were studied in 35 contracts. Eleven food brokers in Chicago, Peoria, and Bloomington were asked about their functions in marketing canned vegetables and their relationships with canners and buyers.

All vegetable canners in the state are included in the study except custom packers. Soup, juice, condiment, relish, pickle, and fruit processors were not included, nor were processors in other states who procure their supplies in Illinois. In this study, no analysis is made of supply and demand factors which influence the general price levels of canned vegetables.

## THE CANNING COMPANIES

In 1953 the 24 firms cooperating in the study owned 27 plants in the state. Fifty-two percent belonged to corporations, 26 percent to private companies, and 22 percent to partnerships. Generally, the private companies and partnerships canned only 1 vegetable. Two corporations canned 1, seven canned 2, three canned 3, and two canned

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<sup>1</sup>Vegetables for Commercial Processing, Annual Summary, 1953 and Vegetables for Fresh Market, Annual Summary, 1953. U.S. Dept. Agr. December, 1953.

4. Plants that canned one vegetable operated an average of 51 days; two vegetables, 38 days, and three or four vegetables, 134 days. The output of the privately owned plants averaged about 22,000 cases, the partnerships 74,000, and the corporations 472,000.

The asparagus plants were relatively small in terms of labor. One privately owned asparagus cannery had only 4 employees. Eleven plants canned tomatoes exclusively; the largest plant had 13 times as many employees as the smallest. Sweet corn, peas, and pumpkin were processed by plants that canned more than one vegetable; these were generally the largest plants. A plant that processed asparagus, sweet corn, and tomatoes had the largest employment—1,500 during the peak season.

### Procurement Policy

The vegetable canners take into consideration market prospects for their products and plant efficiency in deciding how much acreage to contract. They want adequate tonnage to utilize their canning facilities; they also consider inventory, prospective supply, sales experience, price trends, and general business conditions. The canners interviewed did not regard prospective plantings in other parts of the country as important. They were more concerned with the industry's inventory position and the size of their own beginning stocks. They felt that they had built up a demand for their products and could maintain it by keeping up the quality of the packs, and the good will of their customers.

Canners in Illinois contracted 88 percent of their sweet corn acreage; tomato, 85 percent; and pumpkin, 78 percent. Only 46 percent of the pea acreage was contracted and 21 percent of the asparagus (Table 1). The canners operate a large portion of the asparagus acres to insure their supply. Peas are also grown largely on company land. According to several canners, the difficulties in harvesting peas have discouraged some farmers from growing or continuing to grow them. To harvest peas at the proper maturity it is sometimes necessary to work during a rainy period; the harvesting equipment cuts deep tracks in the muddy soil, making it more difficult to prepare the land for a new crop.

Since World War II, some canners have altered their methods of procurement because it became more difficult to contract acreage. They found it necessary to lease more land or grow more on their own land. As a result, a larger acreage has come under direct control and the canners have greater financial and managerial responsibilities.

Table 1.—Acreage of Vegetables Harvested per Plant Under Different Methods of Procurement, Illinois, 1953

|                 | Average<br>number of<br>acres per<br>plant | Percent of acreage |        |            |      |
|-----------------|--|--------------------|--------|------------|------|
|                 |  | Owned              | Leased | Contracted | Open |
| Asparagus.....  | 450  | 62                 | 15     | 21         | 2    |
| Sweet corn..... | 4,186                                      | 4                  | 8      | 88         | 0    |
| Peas.....       | 876  | 14                 | 40     | 46         | 0    |
| Pumpkin.....    | 914  | 0                  | 22     | 78         | 0    |
| Tomatoes.....   | 334  | 11                 | 1      | 85         | 3    |

### Grading Systems

Excepting tomato canneries, some plants had no standardized system of grading in 1953. In 83 percent of the companies, the owner-operator, a designated employee, or the pickers graded the raw product. Under such conditions, usable vegetables can be rejected and poor ones accepted; wide variations in the quality of the finished product result, affecting the canner's relations with the grower, the quality of his pack, and sales.

Four tomato canners employed federal-state inspectors who graded their raw products by United States Standards. Five others used these standards as a basis for grading, but had more stringent requirements to meet their own quality standards. Thirteen processors used their own quality standards; they felt that their pack was already established on the market as acceptable.

Holding time before canning did not seem to affect the rated quality of the finished product. Four asparagus firms canned their product as soon as delivered. The output of one was rated 45 percent Fancy, 55 percent Standard; another, 100 percent Extra-standard; and two, 100 percent Fancy. The output of a firm that held sweet corn unrefrigerated for 8 hours was rated 98 percent Fancy and 2 percent Extra-standard.

### Types of Pack

The processor who uses a variety of can sizes has an advantage over other canners. He can satisfy a wider demand and thus dispose of his output more easily.

**Asparagus.** In 1953, the cooperating firms canned about 400,000 cases of asparagus — 10 percent as whole spears, 84 percent as cut

**Table 2. — ASPARAGUS: Style of Pack and Size of Container, Illinois, 1953**

| Style of pack   | Percent of total pack | Total cases | Percent of each style in container size |     |             |     |     |     |   |    | Total |
|-----------------|-----------------------|-------------|---|-----|-------------|-----|-----|-----|---|----|-------|
|                 |                       |             | 8zS                                     | 8zT | 1<br>Picnic | 12z | 300 | 303 | 2 | 10 |       |
| Whole spears..  | 10                    | 39,400      | 0                                       | 1   | 3           | 6   | 88  | 0   | 2 | 0  | 100   |
| Cut spears....  | 84                    | 335,000     | 13                                      | 20  | 7           | 1   | 48  | 8   | 1 | 2  | 100   |
| Center cuts.... | 6                     | 22,900      | (*)                                     | 0   | 9           | 0   | 73  | 0   | 2 | 16 | 100   |
| All styles..... | 100                   | 397,300     | 11                                      | 17  | 6           | 1   | 54  | 7   | 1 | 3  | 100   |

\* Less than 0.5 percent.

spears, and 6 percent as center cuts (Table 2). Eighty-seven percent of the asparagus was rated Fancy, 11 percent Extra-standard, and 2 percent Standard. There was no direct relation between style and quality of pack. Ninety-four percent of the whole spears, 92 percent of the cut spears, and 100 percent of the center cuts were rated Fancy.

Different-sized firms showed notable differences in style of pack, quality of finished product, and size of container (Table 3). The smallest plants canned cut spears entirely, and as size of plant in-

**Table 3. — ASPARAGUS: Style of Pack, Quality, and Size of Container in Different-Sized Plants, Illinois, 1953**

|                              | Small plants | Medium plants | Large plants | All plants |
|------------------------------|--------------|---------------|--------------|------------|
| Average number of cases..... | 1,150        | 22,130        | 76,020       | 36,110     |
| Style of pack                | (percent)    |               |              |            |
| Whole spears.....            | 0            | 9             | 10           | 10         |
| Cut spears.....              | 100          | 88            | 83           | 84         |
| Center cuts.....             | 0            | 3             | 7            | 6          |
| Quality                      |              |               |              |            |
| Fancy.....                   | 77           | 50            | 97           | 87         |
| Extra-standard.....          | 0            | 50            | 0            | 11         |
| Standard.....                | 23           | 0             | 3            | 2          |
| Size of container            |              |               |              |            |
| 8z short.....                | 0            | 20            | 1            | 5          |
| 8z tall.....                 | 0            | 3             | 7            | 6          |
| No. 1 picnic.....            | 0            | 12            | 25           | 22         |
| No. 2.....                   | 22           | 3             | 0            | 1          |
| No. 300.....                 | 78           | 53            | 55           | 55         |
| No. 303.....                 | 0            | 0             | 9            | 7          |
| 12z.....                     | 0            | 3             | 1            | 1          |
| No. 10.....                  | 0            | 6             | 2            | 3          |

creased the percentage of whole spears also increased. There was little difference in percentage of Fancy grade asparagus packed by the small- and medium-sized plants. They averaged 77 and 78 percent, respectively, but 98 percent of the asparagus of the large firms was rated Fancy grade. The smaller canners packed 78 percent of their output in No. 300 cans, the rest in No. 2. Medium and large firms used the No. 300 for over 50 percent of their pack along with several other sizes; 8-ounce ranked second for medium-sized plants and No. 1 picnic for large-sized plants (Table 3).

**Sweet corn.** In 1953, 16 percent of the sweet corn pack in Illinois was golden whole-kernel, 39 percent golden cream-style, 5 percent white whole-kernel, and 40 percent white cream-style (Table 4). Illinois percentages differed considerably from those for the midwestern states, where 51 percent of the pack was golden whole-kernel and only 13 percent was white cream-style.

**Table 4. — SWEET CORN: Variety, Style of Pack, and Size of Container, Illinois, 1953**

| Variety         | Style of pack | Percent of total pack | Percent of each style in container size |   |     |     |     |   |     |    | Total |
|-----------------|---------------|-----------------------|---|---|-----|-----|-----|---|-----|----|-------|
|                 |               |                       | 8z                                      | 1 | 12z | 300 | 303 | 2 | 54z | 10 |       |
| Golden.....     | Whole kernel  | 16                    | 10                                      | 1 | 7   | 0   | 64  | 0 | 4   | 14 | 100   |
| Golden.....     | Cream style   | 39                    | 17                                      | 1 | 0   | 1   | 76  | 1 | 0   | 4  | 100   |
| White.....      | Whole kernel  | 5                     | 3                                       | 1 | 0   | 0   | 89  | 0 | 7   | 0  | 100   |
| White.....      | Cream style   | 40                    | 9                                       | 2 | 0   | 1   | 84  | 1 | 0   | 3  | 100   |
| All styles..... |               | 100                   | 12                                      | 1 | 1   | 1   | 78  | 1 | 1   | 5  | 100   |

Seventy-eight percent of the pack was in No. 303 cans; 8-ounce followed with 12 percent, No. 10 with 5 percent, and No. 1, 12-ounce, No. 300, No. 2, and 54-ounce each with 1 percent (Table 4).

Variety of sweet corn pack and quality apparently were not related to size of plant. In general, the proportion of whole-kernel decreased as the size of plant increased, as did the percentage of Fancy quality (Table 5).

The proportion of Fancy quality averaged from 96 to 98 percent among different styles of pack in all plants. All styles in Illinois averaged 96.3 percent Fancy, 3.6 percent Extra-standard, and 0.1 percent Standard; midwest averages were 83.4, 3.1, and 3.5 percent, respectively.

Table 5. — SWEET CORN: Variety, Style of Pack, Quality, and Size of Container  
in Different-Sized Plants, Illinois, 1953

|   | Golden sweet corn |                  |                 |               | White sweet corn |                  |                 |               |
|---|-------------------|------------------|-----------------|---------------|------------------|------------------|-----------------|---------------|
|   | Small<br>plants   | Medium<br>plants | Large<br>plants | All<br>plants | Small<br>plants  | Medium<br>plants | Large<br>plants | All<br>plants |
| Average number of cases.....            | 68,900            | 130,700          | 236,700         | 145,200       | 47,900           | 120,700          | 193,600         | 121,000       |
| Variety (percent of total pack).....    | 59                | 52               | 55              | 55            | 41               | 48               | 45              | 45            |
| Style of pack (percent of variety pack) |                   |                  |                 |               |                  |                  |                 |               |
| Whole kernel.....                       | 51                | 21               | 26              | 29            | 17               | 12               | 8               | 11            |
| Cream style.....                        | 49                | 79               | 74              | 71            | 83               | 88               | 92              | 89            |
| Whole kernel (percent of variety pack)  |                   |                  |                 |               |                  |                  |                 |               |
| Quality                                 | 94                | 99               | 98              | 97            | 81               | 98               | 98              | 98            |
| Fancy.....                              | 6                 | 1                | 2               | 3             | 16               | 2                | 2               | 2             |
| Extra-standard.....                     | 0                 | 0                | 0               | 0             | 3                | 0                | 0               | 0             |
| Standard.....                           |                   |                  |                 |               |                  |                  |                 |               |
| Size of container                       |                   |                  |                 |               |                  |                  |                 |               |
| 8z.....                                 | 14                | 23               | 2               | 10            | 0                | 3                | 5               | 3             |
| 12z.....                                | 0                 | 0                | 13              | 7             | 0                | 0                | 0               | 0             |
| No. 1 Picnic.....                       | 0                 | 2                | 2               | 1             | 0                | 3                | 0               | 1             |
| No. 303.....                            | 67                | 65               | 63              | 64            | 80               | 94               | 89              | 89            |
| 54z.....                                | 13                | 0                | 0               | 4             | 20               | 0                | 0               | 7             |
| No. 10.....                             | 6                 | 12               | 20              | 14            | 0                | 0                | 6               | (a)           |
| Cream style (percent of variety pack)   |                   |                  |                 |               |                  |                  |                 |               |
| Quality                                 | 100               | 100              | 96              | 97            | 93               | 92               | 99              | 96            |
| Fancy.....                              | 0                 | 0                | 0               | 3             | 7                | 8                | 1               | 4             |
| Extra-standard.....                     | 0                 | 0                | 4               | (a)           | (a)              | 0                | 0               | (a)           |
| Standard.....                           |                   |                  |                 |               |                  |                  |                 |               |
| Size of container                       |                   |                  |                 |               |                  |                  |                 |               |
| 8z.....                                 | 15                | 22               | 15              | 17            | 10               | 10               | 8               | 9             |
| No. 1 Picnic.....                       | 4                 | 1                | 1               | 1             | 6                | 2                | (a)             | 2             |
| No. 2.....                              | 0                 | 1                | 0               | 1             | 0                | 4                | 0               | 1             |
| No. 300.....                            | 12                | 0                | 0               | 1             | 7                | 0                | 0               | 1             |
| No. 303.....                            | 53                | 75               | 81              | 76            | 68               | 82               | 90              | 84            |
| No. 10.....                             | 16                | 1                | 3               | 4             | 9                | 2                | 2               | 3             |

Table 6. — PEAS: Variety, Quality, and Size of Container in Different-Sized Plants, Illinois, 1953

|   | Alaska       |              |            | Sweet        |              |            |
|---|--------------|--------------|------------|--------------|--------------|------------|
|   | Small plants | Large plants | All plants | Small plants | Large plants | All plants |
| Average number of cases..                   | 27,500       | 56,500       | 42,000     | 13,700       | 51,200       | 32,400     |
| Variety (percent of total pack).....        | 67           | 52           | 56         | 33           | 48           | 44         |
| Quality (percent of variety pack)           |              |              |            |              |              |            |
| Fancy.....                                  | 45           | 48           | 47         | 67           | 57           | 59         |
| Extra-standard.....                         | 30           | 32           | 31         | 33           | 38           | 37         |
| Standard.....                               | 25           | 20           | 22         | 0            | 5            | 4          |
| Size of container (percent of variety pack) |              |              |            |              |              |            |
| 8z.....                                     | 8            | 18           | 14         | 20           | 20           | 20         |
| No. 303.....                                | 77           | 75           | 76         | 80           | 78           | 78         |
| No. 10.....                                 | 15           | 7            | 10         | 0            | 2            | 2          |

**Peas.** Three canneries canned only Alaska peas, the other five canning from 13 to 66 percent Alaskas. Sweet peas averaged higher in quality in 1953 — 59 percent Fancy, 37 percent Extra-standard, and 4 percent Standard compared with Alaskas which averaged 47, 31, and 22 percent for the three grades.

About three-fourths of both varieties was canned in No. 303 containers. The remaining one-fourth was packed in 8-ounce or No. 10 cans (Table 6). No plant packed peas in one size exclusively; most canners used two sizes, and two of them used all three. Since 97 percent of the national output was packed in these three sizes in 1953, Illinois canners offered buyers a choice of the most popular can sizes in the United States.

Larger plants packed the same proportion of Alaska and Sweet peas, but the smaller plants packed an average of 67 percent Alaskas. The quality of Alaska peas was nearly the same in the two size groups, but the small plants had 67 percent Fancy Sweet peas while the larger plants had 57 percent (Table 6).

**Pumpkin.** No. 2½ has been the most popular can size for pumpkin, but it is losing out in Illinois, as in other areas, to the No. 303. Canners used these sizes for 38 and 39 percent, respectively, of the pack and No. 10 was used for an average of 21 percent. Two percent was

Table 7. — PUMPKIN AND TOMATOES: Quality and Size of Container in Different-Sized Plants, Illinois, 1953

|                              | Pumpkin<br>all<br>plants | Tomato          |                 |               |
|------------------------------|--------------------------|-----------------|-----------------|---------------|
|                              |                          | Small<br>plants | Large<br>plants | All<br>plants |
| Average number of cases..... | 175,900                  | 6,900           | 39,500          | 23,200        |
| Quality                      |                          | (percent)       |                 |               |
| Fancy.....                   | 100                      | 0               | 9               | 8             |
| Extra-standard.....          | 0                        | 94              | 70              | 73            |
| Standard.....                | 0                        | 6               | 21              | 19            |
| Size of container            |                          |                 |                 |               |
| No. 2.....                   | ...                      | 83              | 20              | 30            |
| No. 2½.....                  | 38                       | 5               | 13              | 12            |
| No. 300.....                 | 2                        | ..              | ..              | ..            |
| No. 303.....                 | 39                       | 12              | 42              | 37            |
| No. 10.....                  | 21                       | 0               | 25              | 21            |

Table 8. — GRADING CANNED VEGETABLES: United States Standard Scoring System

|                           | Aspara-<br>gus | Sweet corn |        | Peas   | Pump-<br>kin | Tomatoes |
|---------------------------|----------------|------------|--------|--------|--------------|----------|
|                           |                | Whole      | Cream  |        |              |          |
| (points)                  |                |            |        |        |              |          |
| Scoring                   |                |            |        |        |              |          |
| Absence of defects.....   | 30             | 20         | 20     | 30     | 20           | 30       |
| Color.....                | 15             | 10         | 10     | 15     | 20           | 30       |
| Flavor.....               | 0              | 20         | 20     | 0      | 20           | 0        |
| Clearness of liquor.....  | 15             | 0          | 0      | 10     | 0            | 0        |
| Tenderness and maturity.. | 0              | 40         | 30     | 0      | 0            | 0        |
| Tenderness.....           | 40             | 0          | 0      | 0      | 0            | 0        |
| Maturity.....             | 0              | 0          | 0      | 45     | 0            | 0        |
| Consistency.....          | 0              | 0          | 20     | 0      | 20           | 0        |
| Cut.....                  | 0              | 10         | 0      | 0      | 0            | 0        |
| Finish.....               | 0              | 0          | 0      | 0      | 20           | 0        |
| Drained weight.....       | 0              | 0          | 0      | 0      | 0            | 20       |
| Wholeness.....            | 0              | 0          | 0      | 0      | 0            | 20       |
| Total.....                | 100            | 100        | 100    | 100    | 100          | 100      |
| Grading                   |                |            |        |        |              |          |
| Grade A or Fancy.....     | 85-100         | 90-100     | 90-100 | 90-100 | 85-100       | 90-100   |
| Grade B or Extra-standard | 0              | 80-89      | 80-89  | 75-89  | 0            | 75-89    |
| Grade C or Standard.....  | 70-84          | 70-79      | 70-79  | 60-74  | 70-84        | 60-74    |

Source: United States Standards. U. S. Dept. Agr.



packed in No. 300, but this size was used by only one processor, who did not use No. 303 (Table 7).

**Tomatoes.** In 1953, only one plant packed Fancy quality tomatoes. The output of seven canneries graded Extra-standard, and four averaged about 60 percent Extra-standard and 40 percent Standard.

On the average, the canners packed 30 percent of the tomatoes in No. 2 cans, 37 percent in No. 303, 12 percent in No. 2½, and 21 percent in No. 10. But five plants used only No. 2, one plant used No. 303, and another No. 10 for their entire pack.

Small processors used No. 2 cans for 83 percent of their volume compared with only 20 percent for the large canners. Apparently the small plants were more reluctant than the large ones to follow the trend to No. 303 (Table 7).

## MARKETING ILLINOIS CANNED VEGETABLES

The market organization for canned vegetables is distinctly different from the fresh market; it is organized more along the lines of distribution for manufactured goods. An average of 65 percent of the total pack in 1953 was sold to wholesalers; the rest went to chains, retailers, and institutions at averages of 30, 4, and 2 percent.

### Sales Methods

**Direct selling.** Nine percent of the canners sold directly; they felt their pack was too small to justify any other procedure and thought that they received prices comparable to those of competitors. Although individual selling tends to be high-cost, these canners had low out-of-pocket sales expense, selling their output in one or two sales. One of the disadvantages of this method is that it does not enable the canner to predict his per-unit selling cost.

**Sales staffs** are often used by large canning companies whose volumes are sufficient for national distribution. These "national brand" canners usually maintain sales organizations in the larger cities, but they may use food brokers in rural and small communities. The trend, however, is toward expansion of their own sales programs. A salaried sales staff entails a fixed cost regardless of volume or price of product sold. It does not enable the canner to predict his per-unit selling costs. In 1953 none of the locally owned canning companies maintained its own sales organization.

**Food brokers** are utilized by most Illinois canners to sell all or part of their packs. The broker acts as the canner's personal representative in the wholesale market. This method of selling is found advantageous because (1) the broker is not paid until he makes a sale, then receives a small percentage of the price; (2) being in the market continually, the broker has frequent contacts with buyers; and (3) in terms of manpower, his services are equivalent to those of a sales force. Some canners said that they could not employ a sales force for the same amount as a broker's fee. The normal brokerage rate was 3 percent, based on f.o.b. cannery price; it may, however, vary with the degree of service and type of product.

In most cases, business is enacted with the broker by a written contract. About half of the contracts had a 60-day cancellation period; the other half, 30 days. Canners seldom break their contracts, but they may not always comply strictly with the clause granting exclusive sales privileges to the broker. Some processors who sold part of their packs directly had agreements with their brokers that stated no fee would be required on these accounts; others paid brokerage even when they negotiated their own sales.

The brokers interviewed generally agreed that the volume of business they handle has declined with the expansion of direct selling by "national brand" canners and the policy of direct procurement followed by chain stores. One broker, who had cut his salesmen from 8 to 2 in a few years, said such staff reductions were common. Another broker estimated that 20 percent of the brokers outside Chicago and 75 percent in the city were offering merchandising service to aid sales. He said that the volume of sales covered by these services had more than doubled in the past few years.

**Forward sales**, selling under contract before the season begins, were made by 21 percent of the canners and accounted for 48 percent of the volume sold.

**Spot order buying** has increased considerably since World War II. Some canners attributed the increase to the chain stores' practice of buying supplies as they need them to avoid risk of price declines, warehouse costs on accumulated inventory, or payment of interest on idle capital. As a result, there is less forward buying, especially when supplies are readily available. Twenty-nine percent of the canners sold by spot order on the open market, while half of them used a combination of spot orders and forward sales.

**Memorandum orders** merely state that the buyer is in the market

for a specified quantity, variety, or style of pack canned in a specified size of container. These orders are not binding on either party.

**S.A.P. (subject approval price) orders** stipulate a definite volume and a specific delivery date. Formerly they were binding, but now are similar to memorandum orders and the completion of sale is dependent on the buyer's approval of the price. If the buyer disapproves, he is released from the contract; if he accepts, the canner must deliver the stated volume on the day named in the contract. The canner can also be released if certain conditions prevent him from filling the order. Advantages of S.A.P. orders are that (1) the canner knows how much volume he may reasonably expect to sell, provided his prices are in line with competition, and (2) the buyer has a better chance to get the quantity he needs, particularly in periods of scarcity.

**Sales terms** were rather uniform. Ninety-two percent of the canners stipulated 1.5 percent 10 days, net 30 days; the rest decreased the 10-day allowance to 1.0 percent. Twenty-one percent offered a 2.0 percent allowance for cash.

**Sampling.** Canners furnish their customers with samples of each lot and the contents are examined to see if they meet quality standards of the designated grade or the buyer's specified requirements. The sales agreement stipulates which lots he accepts. If the buyer does not consider the quality of the product he receives equal to that of the sample and a disagreement with the canner results, they can appeal to a board of arbitration at Chicago, Peoria, or Springfield. These boards are composed of a canner, a wholesale grocer, and a broker who are familiar with the product. Normally, few cases are brought before the boards, the canners making price concessions rather than risking unfavorable publicity or the loss of a customer.

**Labels.** Eight percent of the canners sold under their own labels; 12 percent under buyers' labels, and 80 percent used both. In volume two-thirds of the total pack went under buyers' labels. Of the canners who used both buyers' labels and their own, 42 percent decided on the basis of quality of the pack, usually selling Fancy grade under their own brand. Other canners followed their buyers' preferences.

**Advertising** or promotional allowances were made to customers by 21 percent of the processors. Canners who advertised made a specific allowance per case, furnished material on tie-in advertising or paid half the advertising cost. These canners felt that through advertising they could meet promoted competition and outsell canners who did not advertise. They also felt that they gained "good will" and increased the demand for their products.

## Prices

The prices of Illinois canned products are included in the quotations of midwest vegetables. Data are not available to determine the relation between prices received in Illinois and in other midwestern states, but the highly competitive nature of the industry would indicate that Illinois prices were "in line" with the midwest average.

In setting the wholesale price for their product, most canners seem to "follow the leader" in allowing discounts of 11 to 20 cents a case under the price of "national brand" products. Half of the canners determined their prices by watching the quotations of other canners. Five consulted trade papers and journals, but others felt that these averages were too general to use. Two obtained their information from brokers and one from suppliers.

During the 1953-54 marketing season, the average weekly f.o.b. canner spot prices per dozen for various sizes of containers, grades, and styles of pack were very sticky. In some instances the price did not change during the entire season; in others only one or two changes occurred. Prices did not rise and fall frequently and violently except in a few classes.

**Asparagus.** Little direct comparison was possible among the various producing areas or among grades, as the California prices were based on No. 2 cans, Eastern prices on cut spears in No. 303's and midwestern prices on all grades and cuts in various can sizes. Midwest prices advanced during the third week of July and then did not change for 8-ounce and No. 303 cans. They changed only slightly for No. 1 picnic during the remainder of the season. During the year the price pattern was extremely stable; the greatest price change for any size of can from any producing area was 4.6 percent.

**Sweet corn.** Prices did not change after January 18 for any quality, style, variety, or can size. In 8-ounce containers the price of white whole-kernel Fancy exceeded white cream-style by seven cents a dozen during most of the season. In No. 303, golden whole-kernel averaged one to four cents a dozen above cream-style of the same quality, while white whole-kernel and cream-style were the same price. In No. 10's white corn was priced higher than golden, and whole-kernel higher than cream-style.

**Peas.** The price of peas packed in 8-ounce cans was very rigid. Eight sizes or grades sold for the same average weekly price throughout the year, two grades had one price change, and another changed

prices twice. In No. 303 cans, the number of price changes ranged between zero and ten for the various classes—an average of one change every 15 weeks, with 10 cents a dozen the greatest variation in any class.

After the early price fluctuations, Fancy Size 1 Alaska peas in 8-ounce cans sold for 25 percent more per dozen than Size 2, and 62 percent more than Size 3. Extra-standard Size 2 peas averaged 30 percent more than Size 3 and 40 percent more than Size 4.

In No. 303 cans Size 1 Fancy Alaska peas were 27 percent more than Size 2, and 52 percent more than Size 3. Extra-standard Size 2 was 14 percent higher than Size 3 and 27 percent higher than Size 4. Price relationships for peas in No. 10 containers were about the same as for those in No. 303.

**Pumpkin.** The average price of midwest pumpkin in No. 10 declined 6 percent from the opening quotations in October to mid-December and remained until quotations were discontinued in April. The price of No. 2½ and No. 303 cans declined 10 percent. No. 2½ was the only size to recover any of its seasonal drop.

**Tomatoes.** Cannery prices declined for midwestern tomatoes in No. 2 cans, particularly Fancy and Extra-standard grades. Closing prices for the season were 10 and 12 percent below the opening prices. There were wide variations among grades. Prices of Fancy averaged 52 and 75 percent more than those of Extra-standard and Standard. In No. 2½ cans, prices of Fancy and Extra-standard tomatoes did not vary throughout the season. Standard grade fell seven percent in price in November but recovered half of the loss in March.

Price spreads among grades indicate that it might be beneficial for Illinois canners to increase the quality of their pack. In 1953, 8 percent of the tomatoes canned by processors interviewed graded Fancy, 73 percent Extra-standard, and 19 percent Standard. On the basis of average prices per dozen for the different-sized cans, assuming other factors equal, canners would have made about \$35,600 if the Standard tomatoes had been of Extra-standard quality. If the entire pack had graded Fancy, returns may have been increased nearly \$300,000.

### Sales Movement

Canned vegetables can be stored for many months before they begin to deteriorate. "Stocks are carried within and between marketing seasons either because merchants wish to have stocks on hand for

Table 9. — Annual Movement by Months of Canned Vegetables  
Sold or Shipped, Illinois, 1953

|                | Asparagus                 | Sweet corn | Peas | Tomatoes |
|----------------|---------------------------|------------|------|----------|
|                | (percent of actual cases) |            |      |          |
| January.....   | 8                         | 7          | 7    | 6        |
| February.....  | 6                         | 9          | 8    | 4        |
| March.....     | 7                         | 6          | 10   | 5        |
| April.....     | 7                         | 7          | 7    | 4        |
| May.....       | 18                        | 5          | 5    | 2        |
| June.....      | 13                        | 5          | 12   | 4        |
| July.....      | 8                         | 4          | 16   | 5        |
| August.....    | 7                         | 17         | 11   | 14       |
| September..... | 8                         | 17         | 4    | 15       |
| October.....   | 7                         | 10         | 9    | 21       |
| November.....  | 7                         | 6          | 6    | 12       |
| December.....  | 4                         | 7          | 5    | 8        |
| Total.....     | 100                       | 100        | 100  | 100      |

merchandising purposes, or because expected price changes exceed costs and risk premiums sufficiently to induce storage."<sup>1</sup> Fifty percent of the canners dispose of their output as soon as possible, apparently not influenced by either merchandising possibilities or risk premiums. Most made no effort to supply customers if their pack did not last out the season, and these canners had only an occasional carryover.

In 1953 the peak movement of Illinois asparagus occurred in May and June when an average of 31 percent of the annual pack was sold (Table 9). Canners say heavy sales in these months are encouraged by the appearance of fresh asparagus on the market. Retail merchandisers in Illinois maintain that this relationship is true of other commodities as well. Thirty-four percent of the sweet corn sales occurred in August and September. Unlike asparagus, the lowest sales occurred when fresh sweet corn was on the market in large quantity. Forty percent of the peas were sold in June, July, and August (Table 9). Sales data on pumpkin were available for only one firm, whose sales volume was nearly uniform throughout the year. Apparently distributors were buying on a current basis, forcing the canner to finance storage and assume the risk of price changes. Twenty-one percent of the tomato pack was sold in October, and 62 percent from August to November, the heaviest four-month movement of all vegetables canned in the state.

<sup>1</sup> Norton, L. J. Lecture notes in markets for and marketing of farm products. Univ. of Ill. Dept. Agr. Econ. mimeo. CAE 436-6, p. 33.

Supplementary supplies were purchased by 12 percent of the canners, if needed; an additional 21 percent bought directly from other canners to stay in the market. Although in some instances they have had an immediate loss, these canners felt that the purchase of supplementary supplies is beneficial in the long run because: (1) by assuring their customers of supplies at all times, they secure greater customer loyalty, and (2) they felt that they increased retail sales by keeping their brands on the shelves throughout the year. When supplementary supplies were purchased directly from another canner, a special canner's discount of 1.5 to 4 percent was allowed because the cases were still unsealed, cans unlabeled, and the canners usually buy in carload or truckload lots.

Beginning stock was related to supplemental supplies. While canners who sold only their own products usually disposed of their stock during the season, those who bought supplementary supplies consistently had a carryover. When stocks moved slowly, canners used discounts, cut prices, cooperative advertising, promotion sales, or label allowances to prevent heavy beginning stocks. Other canners made no special effort; if they thought the commodity would sell, they held it and speculated on getting their price.

Quantity discounts were used in the past to increase sales. However the Robinson-Patman Act has halted this practice except where it is justified by costs. Four of the canners in the study gave these discounts to large buyers because their orders involved lower handling and bookkeeping cost than small orders. F.o.b. delivered prices, rather than f.o.b. cannery prices, were used by some canners when beginning stocks were heavy. This enabled them to compete in distant markets where they would otherwise have been excluded by transportation costs. The per-unit returns are varied and the competition is shifted from price to service when the delivered price is quoted.

Dented or rusty cans were not commonly a problem to Illinois canners. Those who had damaged cans to dispose of gave them to local institutions, sold them at a discount, or sold to "special buyers," "rusted brokers," or salvage operators.

### **Distribution of the Pack**

The market area is determined largely by the product's bulkiness and perishability and by the number of sources buyers have for their supply. Improved transportation and communication facilities have

increased the area within which the forces of supply and demand tend to operate.

About 40 percent of the total pack was shipped by custom trucks; 20 percent each by buyers' trucks, canners' trucks, and rail. All the large canners used rail transportation, but only one firm packing less than 100,000 cases used that method. Transportation costs are usually of concern to the buyer, since most canners use f.o.b. cannery prices. Shipping charges can differ enough between localities to put limits on a processor's distribution area or a buyer's sources of supply. They place canners from a greater distance at a market disadvantage. For example, in 1953-54, the average price of eastern sweet corn (golden whole-kernel) exceeded midwestern by 10 cents a dozen for Fancy, 3 cents for Extra-standard, and 4 cents for Standard. The freight rate from Illinois canneries to New York City — 13.2 to 14.7 cents a dozen — added to the price of midwestern sweet corn made it more expensive to New York buyers than eastern corn. The disadvantage was greater for Extra-standard and Standard than for Fancy, which was priced lower in comparison with eastern corn.

The market area for almost all commodities has been widening. The area of distribution for each vegetable is given below, and some indications of consumers' preferences for can size, style, and quality of pack.

**Asparagus.** The bulk of the Illinois pack is sold in midwestern markets, but it is marketed also in the United States and Canada east of the Rocky Mountains. Canners in the state concentrate operations to take advantage of their competitive location. One packer in the study disposes of his crop within a small radius of his factory; another sells his entire output in Chicago; one sells about 80 percent in Chicago, 10 percent in the Southwest, and 10 percent in the East; while the rest sell throughout the market area.

The canners mentioned specific cities in which they sold large percentages of asparagus. Although there was considerable overlapping, particularly in central and northern Illinois, each canner named one or more markets that the others did not name. To decrease local competition, these men try to develop outlets in cities where other Illinois canners do not sell a large percentage of their pack. This results from aggressive merchandising, not a "division of the market."

There were certain preferences for different-sized containers in various cities or areas. Asparagus in No. 303 cans can be sold in any mar-



ket, large quantities of 8-ounce cans are sold in Chicago and St. Louis, while other cities like No. 1 picnic. In the south-central United States and the Southwest, consumers in the cities prefer 8-ounce and those in the rural areas No. 1 picnic. Regardless of can size (except No. 10), buyers in all areas wanted cases that contained 24 rather than 48 cans.

There was no difference between rural and urban areas in quality preference for Illinois asparagus, but there was a preference for style of pack. The large cities wanted both the most expensive whole spears and the cheapest center cuts, whereas rural areas preferred cut spears. The canners indicated that they had never canned enough whole spears. It is often necessary to ration the supply of whole spears to buyers of cut spears and center cuts. Otherwise there would not be enough whole spears to last throughout the season. At times this allocation has been an advantage, as the whole spears tend to help sell the other styles.

**Sweet corn.** In general, the market for Illinois sweet corn extends south from the Illinois-Wisconsin border to the Gulf of Mexico and east from Kansas City to the Atlantic Coast. This distribution area starts about 600 miles farther east than the one for asparagus and does not include the north-central and New England states and Canada. Nearly every state or the large cities within the area were named as major receivers for Illinois sweet corn.

Some canners reported that the southern markets preferred larger cans, excluding No. 10's; the 8-ounce container was popular in northern metropolitan centers. The processors generally agreed that consumer acceptance of different can sizes is changing. For example, the No. 303 is rapidly replacing the No. 2. Since the No. 303 is slightly smaller than the No. 2 (26.31 cubic inches compared with 32), it can be used to sell a smaller quantity at the same price to the undiscerning retail buyer or to sell at a lower price, giving it a possible merchandising advantage.

Formerly cream-style sweet corn was marketed almost exclusively. At present consumers are buying about as much whole-kernel as cream-style. This is probably because whole kernel is more succulent, less mature when processed, and considered to have a better flavor than cream-style.

Most Illinois white sweet corn is distributed in the South, Southwest, and Southeast, but the proportion of white is decreasing. This change is attributed to the predominance of advertising for the yellow

variety. Nevertheless, white sweet corn is still preferred in many cities and areas. Some canners reported an increasing demand for white sweet corn in New York State in recent years. Yellow sweet corn is sold predominately in the northern and eastern markets.

In the northern markets there is a strong preference for Fancy quality. In the South the cheaper Extra-standard and Standard are the qualities in greatest demand. These differences may be associated with purchasing power and relative retail prices. For example, in 1953 per-capita income in the southeast region was \$1,159; in the northeast, \$1,824; and in the central, \$1,884.

**Peas.** Illinois peas were distributed in the same general area as sweet corn, that is, in the eastern two-thirds of the United States. Fancy quality peas are more acceptable in the northern markets and "near-Fancy" and Extra-standard are sold in the southern states. As was true with sweet corn, small cans were most popular in the metropolitan centers and large cans in rural areas. It was felt that the trend toward small cans would continue for a while longer. The Midwest and East provided better markets than the South and West for both Sweet and Alaska peas from Illinois.

**Pumpkin.** Illinois pumpkin is distributed in the same general area as sweet corn and peas. The South, however, buys less of the annual pumpkin pack than of the other two vegetables. Because of the high ratio of bulk to value, it is difficult to distribute pumpkin in distant areas. In many markets where brokers can easily sell a carload of peas or sweet corn to a distributor it is difficult, if not impossible, to sell the same quantity of pumpkin. If pumpkin is moved in carload lots it must be sold in large consuming centers. If sold in smaller centers it normally must be shipped in mixed cars or in less-than-carload quantities. Higher rates on less-than-carload quantities plus increased handling and overhead expense decrease the competitive position of Illinois canners in distant markets.

**Tomatoes.** Illinois tomatoes are distributed in the state as well as in nearby areas to the north, west, and southwest. No markets east or south of Illinois were named, probably because large quantities of tomatoes are processed in Indiana, Ohio, New England, and the Mid-Atlantic states, which not only supply their own needs but ship to the southern markets. Only two processors had noticed a difference in quality acceptance. There was no noticeable preference for particular can sizes within the area.

## **CANNER-GROWER CONTRACTS**

As is true in all industries, canners desire to secure their supply at as low a price as feasible, and growers want to get a high price for their raw products. The growers are not usually as well informed about market conditions as the canners. Often they do not know how prices and other provisions offered by canners in their area compare with those in nearby producing areas. In the long run, the price agreement will depend on what price the processor receives for the finished product, and on what other opportunities are available to the grower.

### **Merits of Written Agreements**

In general, the business relationships between Illinois vegetable growers and processors are defined in a written contract. Equitable contracts not only help to encourage the production of crops suitable for canning and to move them from the field to the cannery; they also affect the size and location of individual canning companies. Contract terms influence competitive relationships among canners in different regions as well as within an area.

Doing business on a contract basis has certain benefits to both parties. It is advantageous to the canner because (1) the planted acreage is known and he is assured of a grower's output, reducing his supply risk; (2) as he is usually in control of the contract terms, he can encourage quality production by his price schedule; and (3) he knows in advance the per-unit price he will pay and is not subject to risk in the event of advancing prices.

The producer can also benefit from the contract: (1) he is assured of a market, and with less demand risk he can devote full attention to production; (2) he knows what price he will receive for his product, what the hauling distance is, and what the other marketing costs will be; (3) he can normally get assistance in financing his crop; and (4) canning vegetables are usually an early cash crop.

There are certain disadvantages in signing a contract. The canner must assume the time risk between contracting for the raw material and selling the finished product. The grower may find it difficult to estimate his net return because so many contracts are vague or incomplete.

### **Types of Contracts**

Eighty-eight percent of the agreements studied were sales contracts in which the grower owned the crop, the canner agreed to buy, and the grower agreed to sell. Twelve percent were bailment contracts

in which the grower acquired no right, title, or interest in the seed which the company furnished, nor in the crop grown and harvested, holding possession of the seed and crop as bailee only.

Flat-rate contracts, those in which a certain price is set for the gross weight of the raw product, are equitable only under normal conditions. Most of the contracts were modified by some variation in price for quality or yield. Modified contracts function to the advantage of both grower and processor. The canner is able to obtain a closer quality-price relationship than with a flat-rate contract, and the grower is encouraged to produce a superior product for higher returns. Pricing on a gross-weight basis was more likely to occur in contracts for sweet corn, where it has been difficult to find any satisfactory method for rating the quality of the raw product.

Contracts ranged in length from 160 to 2,590 words, the longest agreements usually involving sweet corn and peas. Short contracts did not include all the essential provisions, but fieldmen report that growers are reluctant to read or sign lengthy agreements.<sup>1</sup>

### General Provisions

**Planting.** Disregarding perennial asparagus, 62 percent of the contracts contained provisions for planting the crop, 50 percent of them stating that the grower was to do the planting under the canner's direction.

Seed or plants were supplied by the canner in all of the sweet corn, pea, and pumpkin contracts, and in seven of the tomato contracts. The grower paid for seed or plants in 63 percent, the canner in 28 percent. Six percent contained no provision covering cost, and 3 percent gave the grower the option of buying from the canner.

Variety was specified in 62 percent of the agreements. In those requiring the grower to buy the seed, 80 percent showed the price, 10 percent said only at cost, and 10 percent stated price would be announced when the price of the crop is determined. Sixteen percent allowed for replanting with no charge for extra seed.

Fifty-five percent of the sweet corn, 88 percent of the pea, 33 percent of the pumpkin, and 70 percent of the tomato contracts expressly excluded any warranty on the canner's part as to the quality of the seed or plants, or any guarantee of crop therefrom.

Each contract specified the number of acres to be planted, but specific location on the farm was not included.

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<sup>1</sup> Huelsen, W. A. The fundamentals governing canner-grower contracts. *The Canner* 100(8):52. 1945.

**Fertilizer.** One-third of the contracts provided for the use of fertilizer or left blanks for recording the kind and amount. It was selected by four canners; one permitted the grower to choose. The right to specify the amount per acre was given to the canner in seven, and one could specify the time of application. One contract permitted cancellation by the canner if the grower did not follow his recommendations. Two canners made free soil tests for their growers.

**Insect control.** Nearly 60 percent of the contracts included some provision for insect control. The responsibility rested with the canner in 35 percent and with the grower in 6 percent; the rest left it optional. In 20 percent of the contracts providing for insect control the canners paid for the insecticides; in 30 percent the growers handled the cost. Ten percent provided for equal sharing of the cost and 40 percent did not specify.

**Delivery.** Eighty-two percent of the agreements specified where the crop was to be delivered and the remainder merely said it should be delivered according to the company's instructions. Eighty-five percent stipulated that the grower would deliver; the remainder permitted optional arrangements. Seventeen percent said the canner would deliver at the grower's expense if the grower failed to do so. Four tomato, one sweet corn, and two asparagus contracts mentioned how the crop was to be delivered. There were some disclaimer clauses in which the canner agreed to help the grower harvest and haul, but was not liable if weather made delivery impossible; the contract did not constitute a guarantee to haul.

**Landlord-tenant.** Canners are concerned with leasing arrangements only if returns from the crop are to be divided between landlord and tenant. Thirty-two percent provided for specifying the share to be paid to the landlord and tenant. Fifty percent had a blank for the landlord's name, 15 percent required signatures of both landlord and tenant, and 35 percent had no such provision.

**Contingency.** Although emergency provisions in a contract should protect the grower as well as the canner, 21 percent of the contracts could be canceled only at the buyer's option. The other 79 percent could be voided by circumstances beyond the control of either party. Misunderstandings can occur over notifying the other party of an emergency. Fifteen percent required immediate notice, 3 percent required a written notice within 5 days, and 82 percent did not include a statement on notification.

In addition to the contingency clause, two contracts stated the canner's option to cancel the agreement. Two gave the grower the right to cancel within 10 days after receiving notice of the price of raw materials. The rest did not include any cancellation provision.

**Binding.** Thirty-two percent of the contracts provided that, in case of the grower's death, the contract would be binding on his heirs, executors, administrators, or representatives. Twenty-four percent specified successors, assigns, heirs, administrators, or executors of the canner. Unless a contract contains such a clause, it is not binding, and neither party is protected.

**Fair Labor Standards Act.** Twenty-four percent of the contracts stipulated that the crop be produced in compliance with all terms of the Fair Labor Standards Act. Nine percent included a statement that the grower would comply with all governmental regulations.

### Asparagus Contracts

**Harvesting and delivery.** In 1953, one cannery received cut, and the other received snapped asparagus. Crates were furnished by the canners for delivery to the plants. The growers were to keep them free of dirt and mold, and no charge was made unless the crates were damaged or not returned.

The delivery season was determined by mutual consent. One contract stated that the crop should be delivered on "the same day that it is harvested." One stipulated that the season would begin as soon as volume became sufficient, and would end by a specific date or by mutual agreement.

**Grading.** Canners selected representative 10-pound samples for grading, but no sampling method was specified. The canner was given authority to grade, but the grower's rights were not mentioned.

Both companies specified that the stalks should be fresh, unfrozen, unwashed, unwatered, reasonably straight, and free from beetle bugs. They should measure not less than  $\frac{1}{4}$  inch in diameter (determined  $4\frac{1}{4}$  inches from the tip) with heads free from seediness. White butts and stalks shorter than 6 inches after trimming were considered waste. Freedom from blemishes, reasonably firm heads, reasonably unopened heads, stalks not more than 9 inches long, or stalks not less than 6 or more than 11 inches long were included in one contract or the other. These specifications followed U. S. Standards with two exceptions:

(1) the canners included "unwashed" and "unwatered," and (2) the diameter was measured a shorter distance from the tip and longer spears were permitted in the contracts.

**Pricing.** One canner based his prices on field-cut asparagus with (1) straight stalks, tight heads, over  $\frac{5}{8}$  inch in diameter; (2) straight stalks, tight heads,  $\frac{3}{8}$  to  $\frac{5}{8}$  inch in diameter; (3) crooked stalks, tight heads, more than  $\frac{1}{4}$  inch in diameter; and (4) stalks flowered but no evidence of seed, over  $\frac{1}{4}$  inch in diameter. The prices of Classes 2, 3, and 4 were 88, 75, and 50 percent, respectively, of the price of Class 1. In the other contract, prices for snapped asparagus were 175 percent (delivered) and 162 percent (undelivered) of the price of Class 1.

**Payment.** Both contracts called for payment each Wednesday for asparagus delivered by the preceding Saturday. These growers realized an early cash return on their crop.

### Sweet Corn Contracts

**Harvesting and delivery.** The canner had the right to direct planting in 91 percent of the contracts, and all specified that he was in charge of harvesting. In 55 percent the canner could harvest at the grower's expense if the grower failed to do so. In three agreements, the crop was to be delivered as fast as it matured, and in one it was to be delivered "the same day as harvested." In the rest of the contracts, it was to be harvested and delivered according to the canner's directions.

In more than half of the contracts, the processor agreed to furnish equipment, labor, or both for harvesting. In 27 percent of these agreements, there were provisions for paying the grower for use of his equipment; 9 percent stated that there would be no charge. Twenty-seven percent stipulated the corn was to be hand-picked, while 18 percent left the method optional. Forty-five percent provided that if the canner harvested, the grower would furnish extra power and labor on request; 40 percent of this group stated that it would be without charge. Fifty-five percent had no liability clauses protecting the canner if harvesting were prevented by weather conditions. One relieved him of any damage if the crop were not harvested.

The time of harvest may be a point of disagreement between growers and canners. According to popular opinion, delaying harvest will increase the per-acre yield. However it has been found that

maximum weight is attained at a relatively early stage of maturity. A test to determine the effect of harvest time on moisture content and yield of usable ears of Country Gentleman sweet corn showed that gain in total weight per acre was very rapid in the early stage of ear development (Table 10), but the rate of gain decreased as it reached maximum weight and then stopped. After the twentieth day there was no significant increase in yields of ears or ear parts.

**Table 10.—SWEET CORN: Effect of Advancing Maturity on Per-Acre Yields of Country Gentleman**

| Days after mid-silking | Unhusked ears | Husked ears     |                 | Cut kernels     |   |
|------------------------|---------------|-----------------|-----------------|-----------------|---|
|                        |               | Prime           | Prime plus dent | From prime ears | Moisture prime ears, percentage wet basis |
|                        |               | (tons per acre) |                 | (percent)       |   |
| 16                     | 3.08*         | 1.49*           | 1.49*           | .72*            | 77.2                                      |
| 18                     | 3.15*         | 1.74*           | 1.74*           | .89*            | 75.1                                      |
| 20                     | 3.39          | 2.07            | 2.07*           | 1.06*           | 71.2                                      |
| 22                     | 3.37          | 2.15            | 2.30            | 1.31            | 68.7                                      |
| 24                     | 3.53          | 2.11            | 2.47            | 1.24            | 66.5                                      |
| 26                     | 3.58          | 1.38*           | 2.54            | .92*            | 69.0 <sup>a</sup>                         |
| 28                     | 3.37          | .62*            | 2.46            | .37*            | 65.9                                      |

<sup>a</sup> Temporary increase in moisture content caused by rain.

\* Significantly less than highest yield. Where no asterisk is shown, the difference was due largely to chance.

Source: Huelsen, W. A., Grower contracts for sweet corn. Ill. Agr. Exp. Sta. Cir. 472, p. 9. 1937.

**Grading.** Many tests have been used to evaluate the quality of the raw product, but no satisfactory objective measure has been found. For this reason, many canners buy their corn at a specific price per ton. Thirty-six percent of the contracts provided for sale on a gross-weight basis. This sort of arrangement, however, is equitable only when the crop is of average quality. In years when the crop is higher-than-average in quality, the canner receives the advantage, and when it is poor in quality, he does not get the value he has contracted.

By varying price according to quality, the processor can reduce the undesirable features of the gross-weight contract. This can be done by pricing on the basis of usable unhusked ears, cut kernels or husked prime ears. Sixty-four percent of the canners bought on a modified gross-weight basis. The proportion of usable unhusked ears



determined the grade, and price was based on 100-percent usable sweet corn with 6 to 35 percent tolerance for unusable ears. Some eastern canners buy sweet corn on a cut-kernel basis. Sample ears are run through a cutter and price is based on the weight ratio of cut kernels to unhusked ears. A base of 30 percent for Country Gentleman and 33 percent for Golden Cross Bantam is used to determine the price. This method has not become popular in Illinois, possibly because of the labor involved. Canners in Illinois have occasionally based their prices on the weight per load of suitable husked ears. The

**Table 11. — Gross Returns per Acre for Country Gentleman and Golden Cross Bantam Sweet Corn Under Various Types of Contracts**

(Basis: 3 tons unhusked, unsorted ears per acre)

| Usable ears   | Prime husked ears | Cut kernel | Country Gentleman |                    |                | Golden Cross Bantam |                    |
|---|-------------------|------------|-------------------|--------------------|----------------|---------------------|--------------------|
|   |                   |            | Pounds per acre   | Price per ton      | Value per acre | Price per ton       | Value per acre     |
| (percent)   |                   |            |                   |                    |                |                     |                    |
| Flat-price gross-weight contract                      |                   |            |                   |                    |                |                     |                    |
|   |                   |            | \$23.00           | \$69.00            |                | \$21.00             | \$63.00            |
| Modified gross-weight contract: unhusked, sorted ears |                   |            |                   |                    |                |                     |                    |
| 96  |                   |            | \$23.49           | \$70.47            |                | \$21.45             | \$64.35            |
| 95  |                   |            | 23.25             | 69.75              |                | 21.22               | 63.66              |
| 94  |                   |            | 23.00             | 69.00 <sup>a</sup> |                | 21.00               | 63.00 <sup>a</sup> |
| 93  |                   |            | 22.76             | 68.28              |                | 20.78               | 62.34              |
| 92  |                   |            | 22.51             | 67.53              |                | 20.55               | 61.65              |
| Modified gross-weight contract: prime-husked ears     |                   |            |                   |                    |                |                     |                    |
| 64  |                   | 3,840      |                   | \$73.57            |                |                     | \$65.05            |
| 63  |                   | 3,780      |                   | 72.42              |                |                     | 64.03              |
| 62  |                   | 3,720      |                   | 71.28              |                |                     | 63.02 <sup>a</sup> |
| 61  |                   | 3,660      |                   | 70.13              |                |                     | 62.00              |
| 60  |                   | 3,600      |                   | 68.98 <sup>a</sup> |                |                     | 60.98              |
| 59  |                   | 3,540      |                   | 67.83              |                |                     | 59.97              |
| 58  |                   | 3,480      |                   | 66.68              |                |                     | 58.95              |
| Modified gross-weight contract: cut kernels           |                   |            |                   |                    |                |                     |                    |
|   | 35                | 2,100      |                   | \$80.51            |                |                     | \$66.82            |
|   | 34                | 2,040      |                   | 78.21              |                |                     | 64.91              |
|   | 33                | 1,980      |                   | 75.91              |                |                     | 63.00 <sup>a</sup> |
|   | 32                | 1,920      |                   | 73.61              |                |                     | 61.09              |
|   | 31                | 1,860      |                   | 71.31              |                |                     | 59.19              |
|   | 30                | 1,800      |                   | 69.01 <sup>a</sup> |                |                     | 57.28              |
|   | 29                | 1,740      |                   | 66.71              |                |                     | 55.37              |
|   | 28                | 1,680      |                   | 64.41              |                |                     | 53.46              |

<sup>a</sup> Sweet corn of normal condition.

sample is weighed, husked, trimmed, graded, and reweighed, and the price is calculated from the base percentage of husked prime ears per ton of unhusked ears — for example, an average of 60 percent for Country Gentleman and 62 percent for Golden Cross Bantam. Hypothetical returns to growers from 3 gross tons of Country Gentleman and Golden Cross Bantam per acre are shown under these different types of contracts in Table 11.

**Pricing.** In 1953, 73 percent of the contracts provided for payment at a specific price per ton, 18 percent varied the price to provide incentives for higher yields, and 9 percent based the compensation on the average price per bushel for Illinois field corn as of December 15. Data were not available to calculate the equity of these pricing schedules; however, contracts based on a competing crop induce growers to plant sweet corn instead of some other crop. This introduces an element of uncertainty, which could destroy the contract market. If this occurred, corn would be grown as free acreage or sold under an open price subject to fluctuation at marketing time. Such an arrangement would be hazardous, considering the large volume to be handled in a short time and the perishability of the product.

**Rejection.** All canners reserved the right to reject sweet corn that was unfit for canning or contained too high a percentage of specified defects — worms, damaged ears or kernels, smut, frost, field corn, overmaturity, short ears, or tare. Several contracts provided that the canner could buy rejected corn at a specified percentage of the usual prime value, or at a price to be agreed upon at time of harvest.

**Ensilage.** Twenty-seven percent of the contracts made no provision for growers' rights. Some contracts gave the grower's interest as (1) up to  $\frac{1}{4}$  the weight of sweet corn raised, (2) up to  $\frac{1}{4}$  the weight of sweet corn delivered if he raised 10 acres or more, (3) up to  $\frac{1}{2}$  the weight of sweet corn delivered after the company fills its needs, or (4) 1 ton per acre free, not to exceed the tonnage delivered. Others did not acknowledge the grower's right to any amount, but provided that he could purchase (1) up to 1 ton per acre at \$1 a ton or (2) a pro-rata share, ensilage to be the property of the buyer, but grower may have the right to purchase in proportion to the amount delivered.

Many contracts had provisions prohibiting the grower from selling his ensilage, stating when ensilage should be removed from company property, permitting grower to buy additional amounts, or stating that the company is not liable for foreign materials or chemicals in the ensilage.

**Payment.** The eleven contracts stipulated ten different payment procedures. Two were in agreement on November 1; one would pay one-half October 1 and the balance December 15; another would pay one-half November 1 and balance February 1; and another would pay on or before November 15. Four agreements were partially based on final delivery, agreeing to pay one-half or all from three to 30 days after final delivery of each variety and the remainder within a maximum of 60 days. One contract contained a blank indicating that the date was to be set by mutual agreement between the contractor and contractee. The most open-ended clause said the canner would pay "as soon after the close of the packing season as possible," permitting considerable leeway.

### Pea Contracts

**Harvesting and delivery.** All of the pea contracts provided for harvest and delivery according to the canner's directions. Twelve percent specified that the canner set the date; the same proportion said that the canner could harvest at the grower's expense if the grower failed to do so according to directions. Canner would furnish equipment and labor in 25 percent and grower would supply additional power and labor, if needed, in 25 percent of the contracts.

One contract said peas "could not be held overnight," and another said they should be delivered "the same day as harvested." Other details were largely omitted.

Harvest date has a considerable effect on grower income. Total weight per acre increases rapidly as the crop matures. The ideal price schedule, if the processor does not want to pay a premium for a certain maturity, would give the grower the same return, regardless of maturity, as long as the peas were "fit for canning." An experimental harvest of Perfection peas from a uniform field at 24-hour intervals over four days showed a weight gain of 179 percent and an increase of 74 percent in grower returns (Table 12). Growers receive less for their Alaska peas if they are harvested before the "optimum" stage, and may increase their returns by delaying harvest beyond that point (Table 13). In addition to lower yields, peas that are harvested at an early stage of maturity have a larger percentage of waste.

**Grading.** No provision for sampling was made in 38 percent of the agreements. Twenty-five percent permitted the grower to observe sampling and grading and to request another sample. Twelve percent

**Table 12.—PERFECTION PEAS: Per-Acre Yield and Return to Grower According to Sieve Size**

| Date of<br>harvest | Total<br>yield per<br>acre | Waste | Grade (sieve size) |     |       |       | Return<br>to<br>grower |
|--------------------|----------------------------|-------|--------------------|-----|-------|-------|------------------------|
|                    |                            |       | 1 and 2            | 3   | 4     | 5     |                        |
| (pounds)           |                            |       |                    |     |       |       |                        |
| June 23.....       | 1,417                      | 184   | 459                | 505 | 245   | 24    | \$ 93.37               |
| June 24.....       | 1,653                      | 117   | 370                | 647 | 428   | 91    | 103.55                 |
| June 25.....       | 2,574                      | 51    | 350                | 754 | 1,040 | 379   | 141.87                 |
| June 26.....       | 3,950                      | 87    | 217                | 577 | 1,426 | 1,643 | 162.27                 |

Source: Huelsen, W. A. The fundamentals governing canner-grower contracts. *The Canner* 100(8):84. 1945.

gave the canner the privilege of resampling. In 1953 the following sampling methods were used:

1. A 25-pound sample was drawn from each section of the viner.
2. The peas were dumped into a trash-removing sizer. An adjustable attachment regulated the flow of sample of each size. Each size and a composite sample was graded.
3. A composite sample was taken in three or four places from the top of each hopper.
4. Samples were taken from 4 to 5 inches below the surface in two or three places in each hopper.

Few of the contracts outlined any right of the grower in respect to grading. Thirty specific grading details, ranging from none to 14 per contract, were included in addition to the over-all terms. Most fre-

**Table 13.—ALASKA PEAS: Per-Acre Yield, Grade, and Return to Grower According to Time of Harvest**

| Date of harvest | Stage of maturity | Total yield per acre | Waste | Grade (sieve size) |        |          | Return to grower |
|-----------------|-------------------|----------------------|-------|--------------------|--------|----------|------------------|
|                 |                   |                      |       | 1 and 2            | 3      | 4 and up |                  |
|                 |                   | lb.                  | lb.   | perct.             | perct. | perct.   |                  |
| July 1....      | Before optimum    | 374                  | 30    | 51                 | 13     | 6        | \$15.90          |
| July 3....      | Before optimum    | 852                  | 14    | 55                 | 22     | 9        | 42.04            |
| July 5....      | Optimum           | 1,728                | 7     | 32                 | 35     | 26       | 72.05            |
| July 6....      | After optimum     | 2,384                | 6     | 19                 | 39     | 36       | 86.34            |

Source: Black, William E. and Froker, Rudolph K. Grower-canner pea contracts in Wisconsin. Wis. Agr. Exp. Sta. Bul. 475, p. 20. 1947.

quently mentioned were: ripening to a hard or mature stage, discoloration, presence of thistle and rose buds, and damage by frost, hail, or disease.

*Sieve-size method.* Until recently most canners used the sieve-size method of grading, but it was still in use by only one canner in 1953. As there are marked size variations between varieties of peas (Table 14), a system which uses size as the only determinant of maturity errs in assuming that all peas of the same size are of equal quality as well. The quality of large peas is usually better when growing conditions are favorable. Normally, Alaska peas can be graded more successfully by this method than other varieties.

Table 14.—ALASKA AND PERFECTION PEAS: Percentage Distribution by Sieve Size, Wisconsin, 1940

| Alaska     |                       | Perfection |                       |
|------------|-----------------------|------------|-----------------------|
| Sieve size | Percent of total pack | Sieve size | Percent of total pack |
| 1          | 4.5                   | 1 and 2    | 8.5                   |
| 2          | 22.9                  | 3          | 14.7                  |
| 3          | 42.5                  | 4          | 29.0                  |
| 4          | 30.1                  | 5 and up   | 47.8                  |

Source: Huelsen, W. A. The fundamentals governing canner-grower contracts. *The Canner* 100(8):82. 1945.

*Specific gravity* was used by one canner as a quality test. Sweet and Alaska peas average 59 percent Fancy and 41 percent Standard in 33- and 34-percent brine solutions.<sup>1</sup> Another processor used this method in conjunction with a tenderometer, as he felt it was necessary to combine both in order to obtain the quality product he desired.

*Tenderometer grading* was used by 75 percent of the canners in 1953. The tenderometer has become more popular than other methods because it is fairly objective, efficient, and easy to use. It measures the pressure required to shear peas, and rates them according to their tenderness. However, this method also does not offer complete accuracy in determining maturity or quality. Data supplied by one firm indicate the relationship between tenderometer and sieve-size grading. Six tenderometer readings were taken of unsized peas from each sample; the rest of the sample was sorted into sizes and two readings

<sup>1</sup> Huelsen, W. A. The fundamentals governing canner-grower contracts. *The Canner* 100(8):82. 1945.



taken on each size. Almost 83 percent of the Size 2 Sweet peas had a reading of 80 or less, but only 2.6 percent of Size 2 Alaska peas received such a low score (Table 15). This would indicate that Alaskas are smaller than Sweets at the same stage of maturity, and shows that the sieve-size method is not a complete determinant of quality. However, the score ranged from 25 to 41 points for each size of Alaska peas, which meant the tenderometer did not distinguish between sizes within a variety.

Five score classes were utilized in tenderometer grading, two in specific gravity, and four in sieve-size. Contracts included 21 different tenderometer grade classifications for Alaska peas, 26 for Sweets, and 22 for Early and Late Sweets. There was a variation in classes among canners: the upper limits ranged from 111 and above to 146 and above and the lower limit ranged from 80 and under to 95 and under.

**Pricing.** Differences in classification according to the method of grading used made price comparisons difficult. However, to determine the effect of different price schedules and grade classes, values were calculated by tenderometer range for all Alaska peas delivered to the five firms canning this variety. As is shown in Table 16, if all peas had been sold under Schedule D, gross returns would have been \$1.38

Table 16.—ALASKA PEAS: Total Weight and Gross Value if All Peas Within the Tenderometer Reading Had Been Purchased at the Indicated Contract Price Schedule, Illinois, 1953

| Tenderometer<br>reading | Total<br>weight<br>(pounds) | Contract schedule |          |          |          |          |
|-------------------------|-----------------------------|-------------------|----------|----------|----------|----------|
|                         |                             | A                 | B        | C        | D        | E        |
| 0-80.....               | 17,791                      | \$ 818            | \$ 1,085 | \$ 1,246 | \$ 1,246 | \$ 756   |
| 81-85.....              | 64,306                      | 2,958             | 3,922    | 3,729    | 4,180    | 2,733    |
| 86-90.....              | 128,333                     | 5,904             | 7,251    | 6,673    | 8,021    | 5,455    |
| 91-95.....              | 188,583                     | 8,250             | 9,807    | 8,863    | 11,315   | 8,014    |
| 96-100.....             | 227,110                     | 9,653             | 10,787   | 9,653    | 13,058   | 7,948    |
| 101-105.....            | 147,850                     | 6,099             | 6,580    | 5,914    | 7,392    | 5,174    |
| 106-110.....            | 146,810                     | 5,763             | 6,166    | 5,505    | 6,974    | 4,405    |
| 111-115.....            | 158,174                     | 5,635             | 6,248    | 5,536    | 6,723    | 4,745    |
| 116-120.....            | 152,054                     | 5,056             | 5,626    | 4,942    | 5,550    | 4,562    |
| 121-125.....            | 129,081                     | 3,986             | 4,389    | 4,196    | 4,389    | 3,873    |
| 126-130.....            | 170,625                     | 4,863             | 5,460    | 5,119    | 5,375    | 3,839    |
| 131-135.....            | 80,245                      | 2,096             | 2,407    | 2,407    | 2,528    | 1,805    |
| 136-140.....            | 58,049                      | 1,379             | 1,625    | 1,625    | 1,828    | 1,306    |
| 141-145.....            | 65,709                      | 1,405             | 1,709    | 1,840    | 2,070    | 1,478    |
| 146-over.....           | 123,894                     | 2,354             | 3,221    | 3,345    | 3,903    | 2,788    |
| Total.....              | 1,858,614                   | \$66,219          | \$76,283 | \$70,593 | \$84,552 | \$58,881 |

Table 17. — SWEET PEAS: Total Weight and Gross Value if All Peas Within the Tenderometer Reading Had Been Purchased at the Indicated Contract Price Schedule, Illinois, 1953

| Tenderometer<br>reading | Early Sweet       |          |                             | Late Sweet        |          |                             | All Sweet <sup>a</sup> |          |                             |
|-------------------------|-------------------|----------|-----------------------------|-------------------|----------|-----------------------------|------------------------|----------|-----------------------------|
|                         | Contract schedule |          | Total<br>weight<br>(pounds) | Contract schedule |          | Total<br>weight<br>(pounds) | Contract schedule      |          | Total<br>weight<br>(pounds) |
|                         | A                 | B        |                             | A                 | B        |                             | A                      | B        |                             |
| 0-80.....               | \$ 88             | \$ 72    | 1,208                       | \$3,864           | \$3,194  | 51,521                      | \$ 3,164               | \$3,032  | 52,729                      |
| 81-85.....              | 356               | 288      | 5,428                       | 4,701             | 3,999    | 70,171                      | 4,537                  | 3,402    | 75,599                      |
| 86-90.....              | 2,805             | 2,306    | 47,543                      | 5,122             | 4,408    | 83,971                      | 6,970                  | 5,195    | 131,514                     |
| 91-95.....              | 2,985             | 2,460    | 55,271                      | 4,871             | 4,257    | 87,766                      | 6,723                  | 5,006    | 143,037                     |
| 96-100.....             | 3,886             | 3,292    | 79,305                      | 7,507             | 6,616    | 148,662                     | 10,144                 | 7,295    | 227,967                     |
| 101-105.....            | 3,985             | 3,321    | 88,565                      | 3,385             | 2,916    | 72,003                      | 6,744                  | 4,817    | 160,568                     |
| 106-110.....            | 1,686             | 1,415    | 41,615                      | 4,684             | 3,984    | 107,687                     | 5,897                  | 4,180    | 149,302                     |
| 111-115.....            | 1,918             | 1,606    | 51,832                      | 1,951             | 1,655    | 49,387                      | 3,796                  | 2,882    | 101,219                     |
| 116-120.....            | 1,146             | 975      | 34,207                      | 2,007             | 1,696    | 56,516                      | 3,221                  | 2,268    | 90,723                      |
| 121-125.....            | 1,498             | 1,237    | 47,573                      | 750               | 626      | 22,761                      | 2,321                  | 1,759    | 70,334                      |
| 126-130.....            | 735               | 563      | 24,490                      | 397               | 320      | 12,789                      | 1,155                  | 913      | 37,279                      |
| 131-135.....            | 697               | 535      | 23,265                      | 269               | 217      | 8,670                       | 926                    | 782      | 31,935                      |
| 136-140.....            | 152               | 116      | 5,055                       | 48                | 38       | 1,540                       | 178                    | 158      | 6,595                       |
| 141-145.....            | 108               | 83       | 3,615                       | 0                 | 0        | 0                           | 94                     | 87       | 3,615                       |
| 146-over.....           | 144               | 111      | 4,815                       | 0                 | 0        | 0                           | 125                    | 114      | 4,815                       |
| Total.....              | \$22,189          | \$18,380 | 513,787                     | \$39,556          | \$33,926 | 773,444                     | \$55,995               | \$41,690 | 1,287,231                   |
|                         |                   |          |                             |                   |          |                             |                        |          | \$41,157                    |

<sup>a</sup> No differentiation between Early and Late Sweet peas in contracts.



a hundredweight more than if they had been sold under Schedule E, 99 cents more than under Schedule A, 75 cents more than under Schedule C, and 45 cents more than under Schedule B. All Early Sweet peas had a difference in value of 74 cents a hundredweight, Late Sweet, 73 cents; and all Sweets, \$1.15 (Table 17).

These variations were due in part to differences in average price and in part to the differences between prices by grade classes. Schedule A discouraged delivery of peas with high tenderometer readings by reducing the price for mature Alaska peas (Table 18). Schedule C paid 87 percent more for a score of 80 and under than for 106 to 110, thus encouraging production of tender peas. There was a difference of 7 or less percentage points among grade prices for Early Sweet and Late Sweet peas. Schedule B for Sweets was apparently designed to obtain the highest proportion of peas scoring 80 and under, pricing peas in this class 92 percent more than those scoring 101 to 105.

In 1953 (considering price schedules only) growers could have increased their returns by producing larger proportions of peas with low tenderometer readings.

**Table 18. — ALASKA AND SWEET PEAS: Contract Prices as Percent of Selected Tenderometer Reading, Illinois, 1953**

| Tenderometer reading | Alaska    |     |     |     |     | Early Sweet |     | Late Sweet |     | All Sweet <sup>a</sup> |     |     |
|----------------------|-----------|-----|-----|-----|-----|-------------|-----|------------|-----|------------------------|-----|-----|
|                      | Contract  |     |     |     |     | Contract    |     | Contract   |     | Contract               |     |     |
|                      | A         | B   | C   | D   | E   | A           | B   | A          | B   | A                      | B   | C   |
|                      | (percent) |     |     |     |     |             |     |            |     |                        |     |     |
| 0- 80                | 117       | 145 | 187 | 147 | 142 | 161         | 160 | 160        | 153 | 143                    | 192 | 142 |
| 81- 85               | 117       | 145 | 155 | 137 | 142 | 146         | 141 | 143        | 141 | 143                    | 150 | 142 |
| 86- 90               | 117       | 135 | 139 | 132 | 142 | 131         | 129 | 130        | 130 | 126                    | 132 | 142 |
| 91- 95               | 112       | 124 | 125 | 126 | 142 | 120         | 119 | 118        | 120 | 112                    | 117 | 107 |
| 96-100               | 108       | 113 | 113 | 121 | 117 | 109         | 111 | 107        | 110 | 106                    | 107 | 107 |
| 101-105              | 105       | 106 | 107 | 105 | 117 | 100         | 100 | 100        | 100 | 100                    | 100 | 100 |
| 106-110              | 100       | 100 | 100 | 100 | 100 | 90          | 91  | 93         | 91  | 94                     | 93  | 100 |
| 111-115              | 91        | 94  | 93  | 89  | 100 | 82          | 83  | 84         | 83  | 89                     | 88  | 75  |
| 116-120              | 85        | 88  | 87  | 77  | 100 | 74          | 76  | 76         | 74  | 85                     | 83  | 75  |
| 121-125              | 79        | 81  | 87  | 72  | 100 | 70          | 69  | 70         | 68  | 79                     | 83  | 75  |
| 126-130              | 73        | 76  | 80  | 66  | 75  | 67          | 61  | 66         | 62  | 74                     | 82  | 75  |
| 131-136              | 67        | 71  | 80  | 66  | 75  | 67          | 61  | 66         | 62  | 69                     | 82  | 75  |
| 136-140              | 61        | 67  | 75  | 66  | 75  | 67          | 61  | 66         | 62  | 64                     | 80  | 75  |
| 141-145              | 55        | 62  | 75  | 66  | 75  | 67          | 61  | 66         | 62  | 62                     | 80  | 75  |
| 146-over             | 48        | 62  | 72  | 66  | 75  | 67          | 61  | 66         | 62  | 62                     | 78  | 75  |

<sup>a</sup> No differentiation between Early and Late Sweet peas in contracts.

**Table 19.—ALASKA PEAS: Value of 24-Farm Average Production as Determined by Quality Production Pattern for Each Farm and Indicated Contract Price Schedule, Illinois, 1953**

| Farm    | Average<br>tenderometer<br>reading | Contract schedule |         |         |         |         |
|---------|------------------------------------|-------------------|---------|---------|---------|---------|
|         |                                    | A                 | B       | C       | D       | E       |
| 1.....  | 93                                 | \$3,421           | \$4,075 | \$3,697 | \$4,672 | \$3,233 |
| 2.....  | 93                                 | 3,406             | 4,032   | 3,652   | 4,348   | 3,192   |
| 3.....  | 94                                 | 3,375             | 3,960   | 3,575   | 4,608   | 3,155   |
| 4.....  | 95                                 | 3,354             | 3,896   | 3,509   | 4,572   | 3,061   |
| 5.....  | 96                                 | 3,346             | 3,873   | 3,485   | 4,560   | 3,036   |
| 6.....  | 96                                 | 3,300             | 3,922   | 3,835   | 4,454   | 2,893   |
| 7.....  | 101                                | 3,239             | 3,588   | 3,216   | 4,220   | 2,698   |
| 8.....  | 103                                | 3,184             | 3,466   | 3,109   | 3,968   | 2,824   |
| 9.....  | 105                                | 3,023             | 3,470   | 3,190   | 3,826   | 2,632   |
| 10..... | 107                                | 2,975             | 3,328   | 2,966   | 3,738   | 2,529   |
| 11..... | 109                                | 2,948             | 3,214   | 2,895   | 3,573   | 2,462   |
| 12..... | 109                                | 2,894             | 3,318   | 3,041   | 3,748   | 2,644   |
| 13..... | 113                                | 2,804             | 3,078   | 2,748   | 3,312   | 2,368   |
| 14..... | 113                                | 2,734             | 3,161   | 2,934   | 3,498   | 2,466   |
| 15..... | 114                                | 2,794             | 3,052   | 2,722   | 3,268   | 2,350   |
| 16..... | 116                                | 2,605             | 3,131   | 2,992   | 3,453   | 2,397   |
| 17..... | 118                                | 2,620             | 2,871   | 2,622   | 3,048   | 2,125   |
| 18..... | 120                                | 2,530             | 2,843   | 2,586   | 3,064   | 2,245   |
| 19..... | 123                                | 2,393             | 2,680   | 2,443   | 2,686   | 2,041   |
| 20..... | 124                                | 2,358             | 2,628   | 2,428   | 2,599   | 2,057   |
| 21..... | 127                                | 2,254             | 2,525   | 2,378   | 2,515   | 1,910   |
| 22..... | 134                                | 2,015             | 2,331   | 2,297   | 2,548   | 1,957   |
| 23..... | 141                                | 1,756             | 2,181   | 2,200   | 2,439   | 1,742   |
| 24..... | 146                                | 1,566             | 2,040   | 2,115   | 2,438   | 1,742   |

Among the 24 farms that produced Alaska peas, gross returns under the different canners' schedules declined an average of \$2.40, \$2.60, \$2.04, \$2.89, and \$1.93 a hundredweight as the average tenderometer reading per farm rose from 93 to 146 (Table 19). Average tenderometer readings ranged from 95 to 120 for Early Sweet peas and from 86 to 129 for the Late Sweets. The price schedules paid premiums for more tender classes of peas (Table 20).

The pricing schedule of the firm that graded by the sieve-size method definitely encouraged the delivery of small peas. Prices for numbers 2, 3, and 4 were 60, 27, and 9 percent, respectively, of the price of No. 1 (Table 21). Assuming the percentage distribution was applicable to all Alaska peas in Illinois in 1953, the value was 95 percent of the average value of Alaska peas graded with a tenderometer. Based on average distribution of Fancy and Standard peas at the plant using specific gravity, its price schedule for Alaska peas would

**Table 20.—SWEET PEAS: Value of 16-Farm Average Production as Determined by Quality Production Pattern for Each Farm and Indicated Contract Price Schedule, Illinois, 1953**

| Early Sweet |                          |                   |         | Late Sweet |                          |                   |         |
|-------------|--------------------------|-------------------|---------|------------|--------------------------|-------------------|---------|
| Farm        | Av.<br>t.r. <sup>a</sup> | Contract schedule |         | Farm       | Av.<br>t.r. <sup>a</sup> | Contract schedule |         |
|             |                          | A                 | B       |            |                          | A                 | B       |
| 1           | 95                       | \$1,699           | \$1,412 | 1          | 86                       | \$3,334           | \$2,846 |
| 2           | 98                       | 1,600             | 1,334   | 2          | 88                       | 3,195             | 2,736   |
| 3           | 100                      | 1,571             | 1,298   | 3          | 89                       | 3,264             | 2,745   |
| 4           | 100                      | 1,551             | 1,286   | 4          | 91                       | 2,997             | 2,597   |
| 5           | 100                      | 1,551             | 1,286   | 5          | 94                       | 2,976             | 2,489   |
| 6           | 104                      | 1,415             | 1,185   | 6          | 94                       | 2,867             | 2,502   |
| 7           | 105                      | 1,433             | 1,196   | 7          | 95                       | 2,773             | 2,416   |
| 8           | 105                      | 1,424             | 1,190   | 8          | 97                       | 2,669             | 2,356   |
| 9           | 105                      | 1,395             | 1,172   | 9          | 99                       | 2,656             | 2,289   |
| 10          | 106                      | 1,449             | 1,201   | 10         | 99                       | 2,656             | 2,297   |
| 11          | 106                      | 1,394             | 1,165   | 11         | 100                      | 2,563             | 2,246   |
| 12          | 111                      | 1,347             | 1,101   | 12         | 100                      | 2,542             | 2,216   |
| 13          | 112                      | 1,284             | 1,067   | 13         | 103                      | 2,459             | 2,121   |
| 14          | 116                      | 1,148             | 963     | 14         | 114                      | 2,070             | 1,756   |
| 15          | 119                      | 1,221             | 979     | 15         | 129                      | 1,693             | 1,384   |
| 16          | 120                      | 1,063             | 886     |            |                          |                   |         |

<sup>a</sup> Average tenderometer reading.

have returned growers 102 percent of the average value by tenderometer grading.

**Rejection.** Seventy-five percent of the contracts gave the canner the right of rejection; 38 percent repeated part of the grading details as reasons. One contract restricted the grower to plowing under, or using

**Table 21.—ALASKA PEAS: Interpolated Tenderometer Scores for Sieve-Size and Specific-Gravity Grading, Illinois, 1953**

| Sieve size or grade             | Percent<br>of total<br>pack | Total<br>weight<br>(pounds) | Total<br>value | Tenderometer<br>score |
|---------------------------------|-----------------------------|-----------------------------|----------------|-----------------------|
| <b>Sieve-size grading</b>       |                             |                             |                |                       |
| 1.....                          | 4.5                         | 83,638                      | \$ 9,409       | 0-86                  |
| 2.....                          | 22.9                        | 425,622                     | 28,729         | 87-99                 |
| 3.....                          | 42.5                        | 789,911                     | 23,697         | 100-124               |
| 4.....                          | 30.1                        | 559,443                     | 5,594          | 125 and over          |
| <b>Specific-gravity grading</b> |                             |                             |                |                       |
| Fancy.....                      | 59                          | 1,096,582                   | \$52,088       | 0-116                 |
| Standard.....                   | 41                          | 762,032                     | 20,956         | 117 and over          |

the rejected peas for feeding livestock. A few contained statements such as the following: "Nothing in this clause shall prevent the company from compensating the contractor for services in connection with peas so rejected on an adjusted basis to be agreed upon between company and contractor."

**Seed peas.** Five contracts provided that "the company may at its option direct that the peas be so matured that they will be suitable for seed purposes." Reasons why the crop may not be used for processing and provisions concerning handling and compensation were also included.

**Ensilage.** Fifty percent of the contracts had no ensilage provision, 25 percent gave title to the grower, and 25 percent to the canner. The most common provision allowed the grower ensilage in the same proportion as the ratio of his acreage to the total acreage served by the station to which he delivered. Only one contract specified price. When the silage was to be removed was specified by 38 percent, and 25 percent said the company would remove it at the grower's expense if he did not.

**Payment.** The contracts had six different provisions for payment: as soon after the packing season as the company can compute settlement; by July 15; as soon as records are complete, but no later than July 25; one-half within 30 days, the rest within 60; on or before October 1; or on or before November 1. The early cash crop advantage was nullified by the leeway between delivery and payment which some contracts allowed.

## Pumpkin Contracts

**Harvesting and delivery.** Two contracts stated that the canner would have charge of harvesting. In another, the canner agreed to furnish equipment and labor to harvest the crop, if necessary, the grower furnishing additional needed power. One company charged \$2 per ton for picking and hauling, another charged \$1.50 and offered the grower the option, at the time the contract was signed, of doing the picking and hauling or having the company do it. All contracts stated that pumpkin was to be delivered according to the company's instructions.

**Grading.** The contracts specified that the "grower agrees that the company may inspect" but they did not specify method of sampling. In one instance the grower had the privilege of inspecting the weighing, grading and counting.

No U. S. Standards have been developed for pumpkin for processing. One contract listed 13 factors which the canner would use in grading; the other two named five. The most frequently mentioned were freedom from decay, insect damage and stage of maturity. One contract included size specifications, the others probably covering this aspect under the term "others not suitable for canning."

**Rejection.** Each contract contained a right-of-rejection clause based on percentage of waste, but the percentage was specified in only one agreement.

**Prices.** Two companies bought on a flat-rate basis, paying a stipulated price for all acceptable pumpkin. One company based its payment on average weight per pumpkin. Another contract had three weight classifications with a 50-cent spread between classes, the median being equal to the price in other contracts.

**Payment** was to be made (1) as soon after picking as possible for the company to compute the settlement, (2) not later than November 20 of the current year, or (3) half the amount three days after final delivery and the balance on the following December 1.

## Tomato Contracts

**Harvesting and delivery.** More provisions regarding containers to be used were included in the tomato contracts than all other harvesting details combined. Ninety percent of the canners furnished the containers. In 50 percent of the agreements, the grower was charged only for hampers not returned; in 30 percent, he paid for use; in 10 percent the grower was to pay for broken containers, with allowance for ordinary wear.

The canner was in charge of harvesting in 30 percent of the contracts, and in 20 percent he could harvest at the grower's expense if the grower did not comply with directions.

Three canners had the right to set the time of day for delivery; six terminated delivery on first frost, or placed a limit on the quantity that would be accepted. Other processors set limits on hours of the day and of the weekdays when deliveries would be accepted. Two contracts stated that the crop might be delivered as long as 24 hours after being picked.

**Grading.** One contract did not mention grading and another referred to it only indirectly. Two contracts specified that grading would be done by government inspectors on a share-cost basis, one implied

that a professional inspector would be employed, and five implied that the canner would do the grading.

Eighty percent of the contracts used U. S. Standards as a basis and 20 percent printed the standards in the contract. Each agreement stipulated maturity. Size specifications varied from "fair size" to a range of  $1\frac{1}{2}$  to  $2\frac{1}{4}$  inches. Ten other grade factors were named, but they did not include catfacing, sunscald, or freezing as provided in the U. S. Standards.

**Rejection.** In order of frequency of mention, causes of rejection were (1) excessive amount of culls, (2) insufficient percentage of No. 1's, and (3) damage exceeding tolerance. Fifty percent specified tolerances ranging from 4.0 to 7.5 percent and another stated that an "unreasonable quantity" of culls was sufficient for rejection.

**Prices.** The average price of No. 1 was 53 percent more than the price of No. 2, and 15 percent more than the price of a combination of No. 1 and No. 2 grades. One contract contained a variable premium clause based on percentage of No. 1 tomatoes.

**Payment.** Twenty percent of the contracts provided for full payment in less than seven days after delivery to the factory, 30 percent in less than 30 days, 20 percent in less than 45 days, 10 percent in 75 days, and 20 percent stipulated no date.

### **Additional Services to Growers**

Seventy-one percent of the firms offered services to growers in addition to those stated in the agreements. Fifty-four percent furnished fertilizer for growers at cost or below retail prices, or financed the grower for fertilizer until he delivered the crop.

Thirty-three percent rented equipment or furnished it free and supplied plants, seed, or both free, at cost, or at a price below cost. They also furnished technical advice, information, and supervision.

Soil-testing service, spray materials, equipment, and labor were furnished by 25 percent of the canners either free, at cost, or below cost. Seventeen percent did custom work or helped to obtain labor and 4 percent harvested the crop at cost.

Many contracts did not adequately show the possible advantages to growers of producing vegetables for commercial processing. These services by canners that were not written into the contracts could increase yields, enhance quality, and reduce the grower's production costs, increasing his net return.

## Recommendations for Sound Contracts

It is not necessary that grower-canner contracts for any vegetable be entirely uniform. In general, the main emphasis should be on sound, equitable, and explicit provisions that clearly define the entire responsibility of the canner and the grower. The following recommendations (excluding price, property description, and legally required names) should be helpful in setting up a contract that is sound and equitable to both parties:

The contract should specify that it is an *agreement to buy and sell*.

The canner's and producer's responsibilities for *planting, cultural practices, harvesting, and delivery* should be described as explicitly as possible.

The canner's obligations in regard to *weighing, sampling, keeping records*, and furnishing the grower with duplicate copies of the records should be stated.

*All services by the canner* and charges for each should be specified. If the canner offers services not usually mentioned in the contract, they should be included to enhance grower-canner relations and enable the grower to calculate his per-unit returns.

Basis of *grading*, grading system, and the number of grades should be set forth in the contract.

Basis and right of *rejection* should be clearly defined.

*Waste* should be determined by actual amount rather than by a fixed percentage.

*Prices* should be directly proportional to quality delivered. Flat-rate, gross-weight contracts should not be used.

*Ensilage* ownership rights, stacking responsibilities, and charges should be stated.

Provisions for *passed acreage* should be included.

*Packer's rights and charges* and the method of repayment for advances of seed, fertilizer, insecticide, etc. should be shown.

*Explicit disclaimer clauses* should be included to exempt the canner from liability for: damage to crop by elements, insects, disease or other contingencies; seed or plant warranty; guarantee of crop; injury to livestock or humans due to consumption of chemically treated seed; and damage to livestock from chemicals or foreign matter in ensilage.

*Conditions under which the canner may assume ownership* of the crop should be specified: if it is not properly cultivated, not delivered properly, or if the grower attempts to sell it to a third party.

*Right of cancellation* by either party and by a specific date should be included.

*A contingency clause* should define the responsibilities of each party and permit cancellation only to the extent that either party is unable to fulfill obligation.

*Mutuality of entry right* should be provided.

Provisions concerning validity of the contract in the event of *the grower's death or the transfer of ownership* of either the farm or factory should be included.

*Both landlord and tenant* should sign the contract if the vegetable is grown on crop-share land, and the division of payment should be stated.

## PROSPECTS FOR THE INDUSTRY

Most of the canners felt that the outlook for vegetable canning in Illinois was favorable, specifically for tomatoes, sweet corn, and asparagus. They thought that the efficient producer would benefit in the future. Only a few canners were pessimistic about the industry's prospects in the state. Two operators planned to expand their physical facilities while others planned to increase output by canning additional kinds of products.

Seventy-five percent of the canners thought that they had advantages over processors in other states including the proximity of a large market, enabling them to keep down freight charges; availability of supplies from nearby manufacturers; and soil, climate, and topography favorable to growing vegetables for canning.

Some canners thought the industry was at a disadvantage in Illinois due to the scarcity of labor at wages canners can afford, forcing many to import labor and the competition for use of the land — for livestock, dairying, field crops, and other vegetables — reducing the amount of land available for growing canning vegetables and raising the cost of raw materials.

The canners gave several reasons why they thought the producer might be at an advantage in growing vegetables for canning rather than vegetables for the fresh market or field crops: the reduction of price and demand risk brought about by growing crops under contract; early cash returns realized from several vegetables; and the relatively small amount of plant food removed from the soil by canning crops, compared with the major field crops grown in Illinois.<sup>1</sup>

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<sup>1</sup> Relative Amounts of Plant Foods Removed per Acre by Canning Crops and Companion Crops. National Canners Association, Raw Products Research Bureau, Washington, D.C.



## SUMMARY

The number of employees per plant varied from four to 1,500. In 83 percent of the plants the owner or an employee graded the raw product.

In 1953, 10 percent of the asparagus was canned as whole spears, 84 percent as cut spears, and 6 percent as center cuts. Eighty-seven percent was rated Fancy, 11 percent Extra-standard, and 2 percent Standard. Sixteen percent of the sweet corn was golden whole-kernel, 39 percent golden cream-style, 5 percent white whole-kernel, and 40 percent white cream-style. Fancy quality averaged from 96 to 98 percent among different styles of pack. Fifty-six percent of the peas were Alaska and 44 percent Sweet. Sweet peas averaged 59 percent Fancy, 37 percent Extra-standard, and 4 percent Standard. Alaskas averaged 47, 31, and 22 percent for the three grades. All of the pumpkin was rated Fancy. The tomatoes graded 8 percent Fancy, 73 percent Extra-standard, and 19 percent Standard.

Nine percent of the canners sold directly. The "national brands" had salesmen in the large cities and utilized food brokers in smaller communities. Brokers were used by most of the local canners. Twenty-one percent of the canners made forward sales, 29 percent sold by spot orders, and 50 percent used both methods. Sixteen processors determined their prices by watching the quotations of other canners; five obtained their information from trade papers and journals, two from brokers, and one from suppliers.

During the 1953-54 season the asparagus price pattern was extremely stable; the greatest change for any size of can from any producing area was 4.6 percent. Sweet corn prices did not change after January 18 for any quality, style, variety, or can size. Pea and tomato prices varied according to variety, quality, and can size. There was a 10-percent change in pumpkin prices during the season.

Fifty percent of the canners disposed of their output as soon as possible, apparently not influenced by either merchandising possibilities or risk premiums. The peak movement of asparagus was in May and June, sweet corn in August and September, peas in June, July, and August, and tomatoes in October. Pumpkin sales were rather uniform throughout the year.

Illinois asparagus is sold in the United States and Canada east of the Rocky Mountains. In general, the market for Illinois sweet corn, peas, and pumpkin extends south from the Illinois-Wisconsin border to the Gulf of Mexico and east from Kansas City to the Atlantic Coast. The tomatoes are distributed in nearby areas to the north, west, and southwest.

Eighty-eight percent of the contracts were sales agreements in which the grower agreed to sell and the canner agreed to buy. In 12 percent the grower held possession of the seed and crop as bailee only. Disregarding perennial asparagus, 62 percent of the contracts contained provisions for planting the crop. One-third of all agreements provided for the use of ferti-

lizer; nearly 60 percent included some provision for insect control; and eighty-two percent specified where the crop was to be delivered.

Grading systems in the asparagus contracts followed U. S. Standards except that the canners stipulated "unwashed" and "unwatered," the diameter was measured a shorter distance from the tip, and longer spears were permitted. Sweet corn was graded according to the proportion of usable unhusked ears, tolerance ranging from 6 to 35 percent. Thirty specific grading details were mentioned in the pea contracts. Most frequently named were: ripening to a hard or mature stage, discoloration, presence of thistle and rose buds, and damage by frost, hail, or disease. One pumpkin contract listed 13 factors which the canner would use in grading; the other two named five. Most frequently mentioned were stage of maturity and freedom from decay or insect damage. Eighty percent of the tomato contracts used U. S. Standards as a basis and 20 percent included the standards in the contract.

Flat-rate, gross-weight contracts are equitable only under normal conditions. Contracts modified by some variation in price for quality or yield enable the canner to obtain a closer quality-price relationship and encourage the grower to produce a superior product for higher returns. One canner based his prices on field-cut asparagus and the other on snapped. Prices in 36 percent of the sweet corn contracts had a flat-rate, gross-weight basis, while 64 percent had a modified gross-weight arrangement. All pea canners and tomato processors used modified gross-weight contracts. Two pumpkin canners bought on a flat-rate basis and the other paid on average weight per pumpkin.

Canning crops are frequently spoken of as early cash crops. This was true only in some instances. Asparagus contracts called for payment each Wednesday for asparagus delivered by the preceding Saturday. The eleven sweet corn contracts stipulated ten different payment procedures, varying from three days after final delivery of each variety to February 1. Payment provisions in the pea contracts varied from July 15 to November 1. The pumpkin contracts stipulated payment on November 20, December 1, or as soon as possible. Twenty percent of the tomato contracts provided for full payment in less than seven days after delivery; others specified 30 days, 45, or 75 days, and 20 percent gave no date.

Seventy-one percent of the firms offered services to growers in addition to those stated in the agreements. Their contracts did not adequately show the possible advantages of producing vegetables for commercial processing. These additional services can increase yields, enhance quality, and reduce the grower's production costs.

In general, the main emphasis in contracts should be on equitable and explicit provisions that clearly define the entire responsibility of both the canner and the grower.











UNIVERSITY OF ILLINOIS-URBANA

Q.630.71L6B  
BULLETIN. URBANA  
601-620 1956-57

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